International Journal of Surgery (2007) 5, 86–88

INTERNATIONAL JOURNAL OF SURGERY

www.theijs.com

Subserosal appendicular stripping

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KEYWORDS
Recurrent appendicitis;
Subserosal appendicectomy;
Appendicular stripping

Abstract Appendicectomy in patients with recurrent appendicitis can be difficult due to an adherent and inflamed appendix. We describe the technique and results of subserosal appendicular stripping (SAA).

Over a four-year period, 49 patients who were diagnosed with recurrent appendicitis required SAA. They had prior admission for acute appendicitis which resolved with antibiotic treatment. Persistent symptoms necessitated surgery.

SAA was necessary in these patients due to an inflamed, adherent appendix with extensive serosal adhesions. The appendix was delivered out from the serosa following retrograde ligation of the appendicular base. The adherent serosa was left intact.

Average patient age was 23 years. All had persistent symptoms for more than one week with a history of one or more previous attacks. No surgical complications were observed except transient serosal bleeding in the first case managed by gentle diathermy.

We advocate SAA as a modification of appendicectomy in patients with recurrent appendicitis where the appendix is inflamed and adherent.

Introduction

Acute appendicitis is the most common emergency in surgical practice. Diagnosis is often difficult with only about 40% of patients undergoing surgery for appendicitis. Management in the acute phase is controversial[1–3] with most patients treated conservatively with antibiotics. A sub-group of these patients develop recurrent episodes of abdominal pain after initial resolution. Diagnosis of recurrent appendicitis is difficult and surgery is considered in those with persistent symptoms. Delayed appendicectomy becomes a challenging and technically demanding procedure. The adhesion of the serosa with the appendix ensheathed in an inflammatory mass with a false capsule necessitates extension of the incision, elaborate serosal dissection and even mobilisation of the caecum. This results in increased patient morbidity and post-operative ileus.[4]

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doi:10.1016/j.ijsu.2006.01.016

In our institution, we have developed a novel technique in this subset of patients resulting in minimal morbidity and early discharge. We describe the technique of subserosal appendicular stripping (SAA) and our results in patients with recurrent appendicitis where the appendix is inflamed and adherent.

Patients and methods

Over four years, 49 patients who had undergone SAA were identified. All patients had persistent symptoms for 7—14 days with localised McBurney's point abdominal tenderness on presentation. These patients gave a previous history of at least one acute episode of right iliac fossa pain consistent with a clinical picture of mild acute appendicitis which had been treated conservatively with antibiotics and resolved. A clinical diagnosis of recurrent appendicitis was made. None of them had an appendix mass. Surgery was considered as a definitive management because they had recurrent symptoms with persistent pain and localised tenderness. SAA is advocated for delayed appendicectomy in the presence of adherent, friable appendicular serosa but in absence of perforation or frank peritonitis.

The procedure involves a right transverse or modified Lanz incision. Approach is as in routine appendicectomy.

The procedure is modified due to the inflamed and adherent appendix with extensive serosal adhesions. The caecum is identified and the base of the appendix exposed and tightly ligated to obliterate the lumen about 0.5 cm distal to the caecum. The serosa is incised circumferentially 0.5 cm distal to the base with a no. 15 blade (Fig. 1). A non-toothed forceps is used to strip the serosa towards the apex with the artery forceps on the cut base providing gentle traction on the appendix (Fig. 2). The adherent serosa is left intact. The mesoappendix does not need to be ligated as the attachment with the serosa is left intact. Bleeding from the appendicular artery and serosa is a possibility and haemostasis should be carefully observed. The mesoappendix needs to be ligated only when there is avulsion or tearing of the serosa as in the first case. We have not had to tie the mesoappendix in the remaining patients. The stripped appendix specimen is examined for completeness before sending for histology.

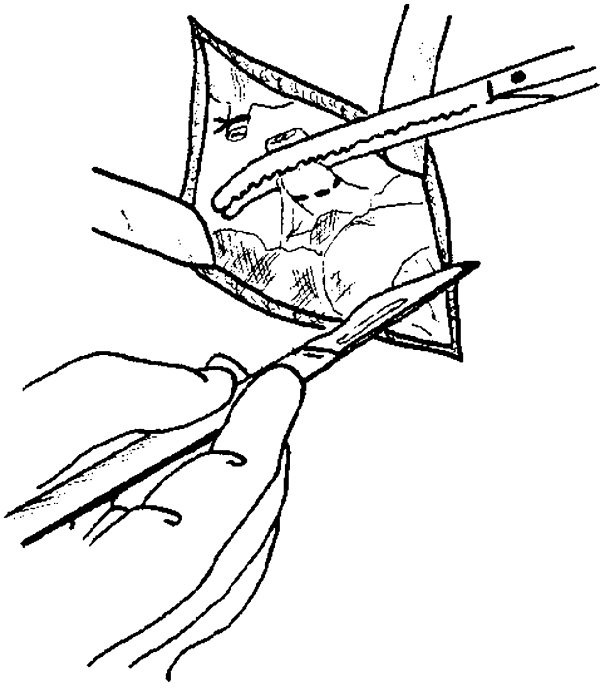

Figure 1 Retrograde approach with incision of the serosa about 0.5 cm distal to the caecum. The base of the appendix has been ligated and divided primarily, to be followed by stripping thereafter.

Results

Forty-nine patients (30 women and 19 men) with an average age of 23 years (range: 14—35 years) had undergone SAA. No surgical complications were observed except transient serosal bleeding in the first case managed by gentle diathermy. Postoperative antibiotics were not used. All were discharged within 48 h after surgery. Five patients had wound infections requiring oral antibiotics. Histological analysis of the appendix specimen confirmed acute inflammation in all patients. The histopathologist also reported lymphocytic infiltrate and

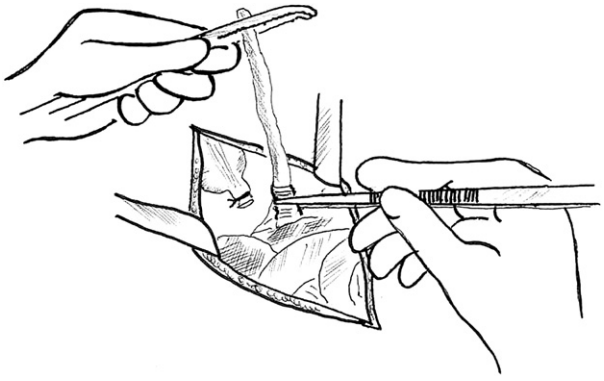

Figure 2 Subserosal appendicular stripping with serosa left inside, adherent to surrounding structures. Minute point bleeding is generally adequately controlled with mono-polar diathermy forceps.

fibrosis in 16 patients. Routine follow-up at three months was uneventful in all patients.

Discussion

The existence of recurrent appendicitis is controversial.[5–8] However, Paterson-Brown[9] comments on this, albeit as a chronic entity whereby he identifies two groups of patients; those who suffer from recurrent appendicitis and others who suffer less-acute episodes of pain after an acute attack. Barber et al.[10] report on this separate entity with patients having multiple admissions with resolution of symptoms after appendicectomy. The debate on the clinical entity of chronic and recurrent appendicitis continues.[7,10–12] However, recurrent right lower abdominal pain leading to appendicectomy is termed recurrent appendicitis only, especially if there is histopathological evidence of acute inflammation[13] along with features suggestive of recurrent inflammation like lymphohistiocytic infiltration on a background of preponderant fibrosis.[13,14] The differentiation between chronic and recurrent appendicitis can be clarified often only by histopathological analysis.[14] Surgeons agree that a significant proportion of these patients have symptom resolution after an appendicectomy.

Appendicectomy in the presence of an inflamed and adherent appendix is a technically challenging procedure with an increased incidence of complications compared with routine appendicectomy. Extension of the incision, increased blood loss and inadvertent damage to the bowel wall are among the recognised complications resulting in increased morbidity. Therefore, antegrade appendicectomy remains the prime option in surgery for adherent and inflamed appendices when the appendicular tip is accessible and free.[15]

Retrograde approach becomes a necessity when the distal appendix is inaccessible. In patients with serosal adherence and matting, retrograde subserosal appendicular stripping is a superior technique. This is technically less challenging (reduces operating time) and safe. Extending the incision is unnecessary. As the caecum need not be delivered out with the adherent serosa, there is minimal visceral handling with no serosal dissection. Haemostasis is also easier to maintain with ligation of the mesoappendix necessary only when tearing or avulsion of the serosa occurs.

Conclusions

Surgery in patients with recurrent appendicitis is a challenging prospect with extensive serosal adhesions requiring extension of the incision, elaborate serosal dissection and often mobilisation of the caecum. Subserosal appendicular stripping overcomes these shortcomings with minimal morbidity and almost no complications. We advocate SAA as a simple modification of appendicectomy for patients with recurrent appendicitis.

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